

REMARKS

The drawings are objected to as being informal. Formal drawings are submitted herewith. Accordingly, Applicants request the withdrawal of the objection to the drawings.

Claim 39 is objected to for an informality, specifically being dependent upon claim "I". Claim 39 has been amended to depend from claim 38. Accordingly Applicants request the withdrawal of the objection to claim 39.

Claims 1, 2 and 11 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,456,762 to Nishiki et al. and further in view of U.S. Patent No. 6,297,894 to Miller et al. Nishiki discloses forming a Bragg grating by applying UV light to an optical waveguide through a phase mask. Miller discloses an optical system for forming holographic images. At a single location, Miller notes that one application of the disclosed holographic system uses a Ti:sapphire laser system (col. 8, lines 7-10).

Applicants submit that Nishiki only discloses using a UV light source from a laser to form a Bragg grating. There is no suggestion that a Ti:sapphire laser could be used. Miller suggests that a Ti:sapphire laser could be used, but does not suggest the presently claimed wavelength. Applicants respectfully submit that the combination of these references only teaches forming a Bragg grating with a Ti:sapphire laser. There is absolutely no suggestion of using a Ti:sapphire laser with a wavelength of approximately 230-250 nanometers. In fact, the combination teaches away from the presently claimed invention as Miller specifically recites a wavelength of 800 nanometers (col. 8, lines 25-30) and notes that an advantage of this wavelength is that it is weakly absorbed by most materials, thus allowing the formation of deep structures (col. 8, lines 25-30). There is absolutely no suggestion of controlling the wavelength of the Ti:sapphire laser to produce an output wavelength of approximately 230-250 nanometers (claims 1 and 11) or pumping the Ti:sapphire laser with a second harmonic pump beam (claim 2). Accordingly, Applicants request the withdrawal of the rejection of claims 1, 2 and 11 under 35 U.S.C. 103(a).

Claims 15 and 21-28 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,528,239 to Starodubov and further in view of U.S. Patent No. 6,574,255 to Caprara et al. Starodubov discloses forming a refractive index grating in an optical fiber using a light source greater than 220 nanometers. Caprara discloses an external cavity optically-pumped semiconductor laser.

Applicants note that neither of the cited references discloses a Ti:sapphire crystal for producing the desired output wavelength as recited in claims 11 and 12, from which claim 15 depends. Accordingly, Applicants request the withdrawal of the rejection of claim 15 under 35 U.S.C. 103(a).

With respect to claims 22, 24, 26 and 28, Applicants note that neither of the references disclose the use of either a VCSEL laser or a laser diode bar. Accordingly, Applicants request the withdrawal of the rejection of claims 22, 24, 26 and 28 under 35 U.S.C. 103(a).

With respect to claims 21, 23, 25 and 27, Applicants note that there is no suggestion or teaching to combine the Bragg forming teachings of Starodubov with the OPS structures of Caprara. Accordingly, Applicants request the withdrawal of the rejection of claims 21, 23, 25 and 27 under 35 U.S.C. 103(a).

Claims 29-31 and 33-39 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,310,996 to Byron and further in view of U.S. Patent No. 6,297,894 to Miller et al. Byron discloses writing a Bragg grating in an optical fiber using a phase mask. Miller discloses an optical system for forming holographic images and, at a single location, notes that the disclosed holographic system can use a Ti:sapphire laser system (col. 8, lines 7-10).

As previously noted, Miller does not suggest the presently claimed wavelength. Applicants respectfully submit that at most the combination of these references only teaches forming a Bragg grating with a Ti:sapphire laser operating at a wavelength of approximately 800 nanometers. This combination does not suggest using a Ti:sapphire laser with a wavelength of approximately 230-250 nanometers. Accordingly, Applicants request the withdrawal of the rejection of claims 29-31 and 33-39 under 35 U.S.C. 103(a).

Additionally, Applicants note that the phase mask system disclosed by Byron is completely different from that disclosed and claimed by the Applicants. In particular, Byron discloses the use of mirrors (e.g., mirrors 21 and 22) to direct the light from a beam splitter onto a phase mask. The light then passes through the phase mask to the underlying optical fiber. In marked contrast, in the present invention and as claimed in claims 30 and 33-35 the light from the source passes through the phase mask before striking the mirrors (see, for example, mirrors 320 and 330 in Fig. 3). As the cited art does not disclose or suggest the presently claimed

system, Applicants request the withdrawal of the rejection of claims 30 and 33-35 under 35 U.S.C. 103(a).

With respect to claim 31, Applicants respectfully submit that the prior art neither teaches nor suggests a block as claimed. In rejecting this claim, the Office Action does not specify that the prior art teaches a block. Although Applicants note that Byron teaches a field stop 24 which blocks portions of the beam, this is not equivalent to the presently claimed block. As shown in Fig. 4 and described in the corresponding text on page 7, the presently claimed block is a refractive block that replaces mirrors 320 and 330. As claimed, the block refracts the rays diffracted by the phase mask. As this claimed aspect is neither taught nor suggested by the cited art, Applicants request the withdrawal of the rejection of claim 31 under 35 U.S.C. 103(a).

With respect to claims 33 and 35, as previously noted the cited art does not disclose or suggest a system in which the source light passes through the phase mask before striking the mirrors. As such, the cited art cannot teach mirror translation as presently claimed. In particular Applicants note that translation of one of the mirrors in the present system, as claimed in claims 33 and 35, will cause the Bragg wavelength to change (page 6, lines 27-33) while translating the mirror in the Byron system simply allows the writing of longer Bragg reflection gratings (i.e., the scanning mode) (col. 3, lines 54-63). As the cited art does not disclose or suggest the presently claimed system, Applicants request the withdrawal of the rejection of claims 33 and 35 under 35 U.S.C. 103(a).

With respect to claim 34, as previously noted the cited art does not disclose or suggest a system in which the source light passes through the phase mask before striking the mirrors. As such, the cited art cannot teach mirror translation as presently claimed. In particular Applicants note that the rotation of one of the mirrors in the present system, as claimed in claim 34, allows suppression of zero order energy, i.e., ray offset (page 7, lines 11-15). Byron does not teach or suggest a similar system. Accordingly, Applicants request the withdrawal of the rejection of claim 34 under 35 U.S.C. 103(a).

With respect to claim 37, the cited art does not teach or suggest a Lloyd mirror as claimed. As the cited art does not disclose or suggest a system using a Lloyd mirror as presently claimed, Applicants request the withdrawal of the rejection of claim 37 under 35 U.S.C. 103(a).

With respect to claims 38 and 39, the cited art does not teach or suggest the use of a prism as presently claimed. The Office Action notes that prisms and mirrors are similar

components and therefore it would be obvious to replace a mirror with a prism. However, the Office Action does not state what mirror is being replaced with a prism to yield the presently claimed invention. Accordingly, Applicants request the withdrawal of the rejection of claim 38 and 39 U.S.C. 103(a).


Claims 3-10, 12-14 and 16-20 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiki and Miller as applied to claims 1 and 11, and further in view of Caprara. As noted above with respect to claims 1, 2, 11 and 12, there is absolutely no suggestion of controlling the wavelength of the Ti:sapphire laser to produce an output wavelength of approximately 230-250 nanometers (claims 1 and 11) or pumping a laser, more particularly a Ti:sapphire laser, with a second harmonic pump beam (claims 2 and 12). Although Caprara discloses frequency doubling, tripling and quadrupling, Applicants are unable to identify any portion of the '255 patent that discloses such a configuration. Accordingly Applicants submit that the combination of the cited art does not teach a system as presently claimed in claims 3-10, 12-14 and 16-20 and therefore request the withdrawal of the rejection of these claims under 35 U.S.C. 103(a).

The Examiner has kindly noted the allowability of claim 32 if rewritten to include the base claim and any intervening claims. Claim 32 has been rewritten as suggested and therefore is in condition for allowance.

Applicants wish to thank the Examiner for the noted allowability of claims 40 and 41.

If in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned at (415) 393-2404.

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